Refrigeration Controller Keypad and Display Instructions

Disclaimer

Novar Controls Corporation
6060 Rockside Woods Blvd., Cleveland, OH 44131
Tel.: 800.348.1235   www.novarcontrols.com

Contents

This page intentionally left blank.

Introduction

Description

The Refrigeration Controller manages the operation of the Novar Controls Spectrum® Refrigeration Control system, an integrated, automation system designed to provide energy-efficient and cost-effective refrigeration rack control. The Refrigeration Controller manages all communication and control activities within the system and operates using settings programmed in the Novar Controls ESS32 software.

This document explains how to use the Refrigeration Controller's keypad and display to:

- Access system status information.
- Monitor system status.
- Change system settings.

NOTE!   Some information cannot be changed using the keypad and display. The highlighted cursor moves only to those values that can be changed.

To use the Refrigeration Controller effectively, the user must be familiar with the following items:

- Keypad
- Display
- System access methods and privileges
- Main Menu options (used to access the system's various screens)

These items are explained in this "Introduction." The remainder of this document explains the options that are offered in the Refrigeration Controller's Main Menu and how to use the screens that can be accessed from each.

NOTE!   The screens shown in this document are examples of components and loads that a user might expect to see in a typical refrigeration control system. The user's screens will differ based on the system configuration.

Keypad

The Refrigeration Controller's keypad (Figure 1) has 16 keys that can be used to perform all of the tasks necessary for monitoring and/or changing parameters.
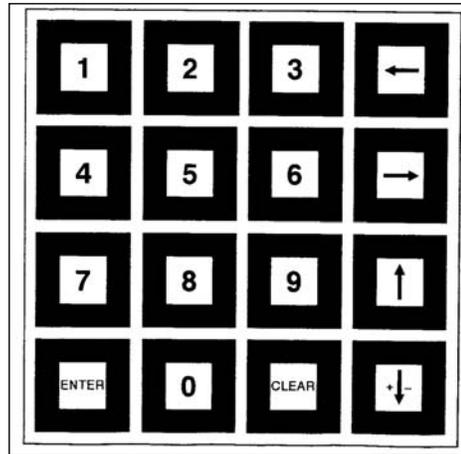
Figure 1. Refrigeration Controller keypad

KEYS	FUNCTION
Numeric	The numbered keys are used to enter numerical values to change system settings.
Right and Left Arrows	The right and left arrow keys are used to: ■ Move the highlighted cursor from one field to another. ■ Scroll through a series of displays. ■ Advance through multiple options.
Enter	The **enter** key is used to confirm a selection or a number value entered by the operator. **NOTE!** Users must press the **enter** key after changing a value or the value will return to its previous setting when the user leaves that field.
Clear	The **clear** key is used to exit any screen and return to the previous screen. Pressing the key repeatedly returns the user to the system information and log-on screen.
Down arrow and plus/minus (+/–)	The down arrow key in the lower right corner of the keypad also serves as the plus (+) and minus (–) key. It is used to indicate positive or negative numerical values. ■ When the highlighted cursor is located in a field containing a numerical value, pressing this key changes the field to the opposite of the current positive or negative value. ■ Negative values are shown with a minus sign.

The following table explains, in general, how these keys are used to select options and change parameters.

FUNCTION	ACTION
Select an option	■ Press the appropriate arrow key or keys to move the cursor to and highlight an option. ■ Press **enter**.
Change a setting or value (access privileges are required)	■ Use the arrow keys to move the cursor to the appropriate field. ■ Use the arrow keys to change a setting or use the number keys and the plus/minus key, if appropriate, to change a value. ■ Press **enter**.
Scroll through a list of options	■ Use the arrow keys to scroll through a list of options. If the down arrow is being used to scroll through a list and the information extends beyond the viewing area, pressing the down arrow moves the display down one full screen or page.
Scroll to the right or left to view additional columns of information	■ Use the left and right arrow keys to scroll horizontally through columns that do not fit in the viewing area.

NOTE! A prompt appears at the bottom of many of the screens. As the user moves the cursor from one parameter to the next, the prompt changes to provide parameter-specific instructions or information.

Display

The Refrigeration Controller has a liquid crystal display (LCD) that is 8 lines by 40 characters (64×240 pixels) in size. Its backlight turns off automatically if the keypad remains inactive for a user-specified period of time. The backlight can be reactivated by pressing any key. Procedures for setting or changing the backlight's on time are provided in the "Diagnostics" section of this document.

When the Refrigeration Controller display is not in use, the system information and log-on screen (Figure 2) is displayed.

```
            02/17/00  11:58 AM
          Refrigeration Controller
  Copyright(C)1995-98 Novar Controls Corp.
      System:  819 FL   CORAL CAPE
      Unit:   01 RACK MTD 00595
              SYSTEM ON-LINE
    PRESS DOWN ARROW KEY FOR MONITORING
        OR ENTER ACCESS CODE:
```

Figure 2. System Log-in screen

The screen contains the following information:

- Current date and time
- Product name
- Copyright information
- Novar Controls product information
- System number (user-defined) and name (user-defined)
- Unit number and name (user-defined)
- System status messages
- Instructions for accessing the system

The system status message (Line 6) indicates what is currently going on within the system. Any of the following messages can appear.

STATUS MESSAGE	EXPLANATION
Download in Progress	A Load Change Download is occurring between the Refrigeration Controller and ESS32.
Loading Comm	A Version Download is being sent to the communications processor within the Refrigeration Controller.
Loading Main	A Version Download is being sent to the Refrigeration Controller's main control processor.
System Calling Out	The Refrigeration Controller is sending alarms to a remote computer.
System Check	The Refrigeration Controller has not received its initial system download containing system-specific control data. It is not able to control the system because it has not received the settings and parameters.
System On-Line	The Refrigeration Controller is communicating with a remote ESS32 computer. - After the connection is made, this message may be replaced by a more specific message such as "Download in Progress."
Version Check	The main Version Download has an error.
Alarms Present	The system has current alarms active. This is for alarm parameters on a specific controller.

System Access Methods and Privileges

From the system information and log-on screen, a user can access the system via *either* of the following methods:

- Press the **down arrow** key to view special, easy-to-use monitoring screens.
- Enter a four-digit access code to gain entry to the system control functions.

A system administrator determines each user's access level and assigns the access codes in ESS32. Three levels of access are available.

ACCESS LEVEL	EXPLANATION
Monitor Only	The user is only authorized to monitor the control screens. The user cannot change any settings.
Temporary User	The user is authorized to make user-defined temporary changes to the available control settings.
Super User	The user is authorized to make permanent changes to all the available control settings within the Refrigeration Controller display screens.

NOTE! Temporary User or Super User access is *required* to change parameters.

When a user enters an access code correctly, the display briefly flashes a message indicating that access is granted and the system displays the Main Menu. If the access code is entered incorrectly, an "Access denied. Try Again!" message appears.

NOTE! If the "System Check" or "Download in Progress" message is displayed, the user will not be able to access the system.

Main Menu Options

The Main Menu is displayed immediately after a user enters the correct access code. The options offered in this menu are used to access displays that can be used to monitor a system's operation and, if necessary, change a system's parameters.

NOTE! The programming done in the Novar Controls ESS32 software determines which options appear in the Main Menu. It is possible that not all of the options that are listed below will appear.

The Main Menu offers the following options.

OPTION	EXPLANATION
Loads	Displays the system loads and provides access to various load screens.
Alarms	Displays the system alarms and provides access to an alarm settings screen.
Alarm Scan	Scans and displays recent alarms or allows the user to view the alarm call queue.
History Logs	Displays all system history logs and provides access to screens showing tabular displays, graphical displays, and point identification.
Schedules	Displays the system schedule directory and provides access to the schedule parameters screen.
Monitoring	Provides access to the same screens that can be entered from the system information and log-on screen using the **down arrow** key. The user can view but not change the system settings.
Diagnostics	Permits the user to view and change system parameters and module information.

Details for using each of these options and the screens they access are provided on the following pages.

Loads

Selecting the **Loads** option from the Main Menu opens the Load Menu, which offers the following options:

- Compressor Control
- Condenser Control
- Circuit/Defrost
- Universal Loads
- Analog Control
- Multi-Alarm Loads
- Compressor Monitor
- Case Controller
- Float Control
- Annunciator Control

Compressor Control

Selecting the **Compressor Control** option from the Load Menu opens the Compressor Selection Menu. The option offered in this menu are based on the compressor loads defined in ESS32 software.

Selecting a compressor load opens the first Compressor Control screen for that load (Figure 3).

```
          COMPRESSOR CONTROL
  Name: MTD compressors          MORE
  Cut-In:    40 PSI    Cut-Out:   33 PSI
  Stage Up Delay:      14 secs.
  Stage Down Delay:     4 secs.   Input:
  Min. On Time:         0 secs.    39 PSI
  Min. Off Time:        0 secs.
            ENTER THE CUT-IN VALUE
```
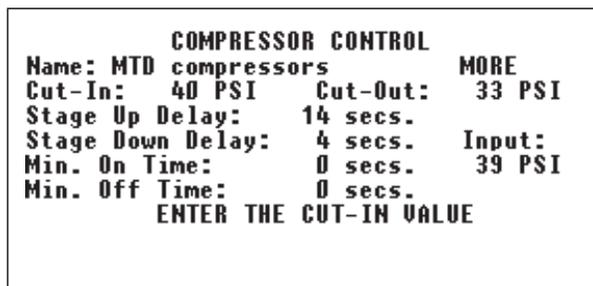
Figure 3. Compressor Control screen #1

This screen can be used to monitor and change the following parameters. As the cursor moves to each parameter, the prompt at the bottom of the screen indicates what should be entered in that field.

PARAMETER	INFORMATION TO BE ENTERED
Cut-in	Cut-in value
Cut-out	Cut-out value
Stage Up Delay	0 to 998 seconds
Stage Down Delay	0 to 998 seconds
Min. On Time	0 to 998 seconds
Min. Off Time	0 to 998 seconds

Selecting the **More** option in the upper right corner of the screen opens the second Compressor Control screen (Figure 4).

```
        COMPRESSOR CONTROL
Name: MTD compressors
Skip  1 stages up at    15  PSI
          above cut-in.
Skip  0 stages down at   0  PSI
          below cut-out.
Hold staging if approaching by  1 PSI
      ENTER NUMBER OF STAGES TO SKIP
```

Figure 4.   Compressor Control screen #2

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION TO BE ENTERED FOR "X"
Skip X stages up	Number of stages to be skipped
Skip X stages up at psig	Cut-in differential pressure
Skip X stages down	Number of stages to be skipped
Skip X stages down at psig	Cut-out differential pressure
Hold staging if approaching by X pressure	Holding differential psig

Condenser Control

Selecting the **Condenser Control** option from the Load Menu opens the Condenser Selection Menu, which offers the following options:

- Fans
- Valves
- Timing

Fans

Selecting the **Fans** option opens the Condenser Fan Setpoints screen (Figure 5).

```
       CONDENSER FAN SETPOINTS
Name: CONDENSER
Fan #    1    2    3    4    5    6    7    8
Cut-In: 180  175  170  165  160  155
Cut-Out:155  150  145  140  135  130
Status: OFF  OFF  OFF  OFF  OFF  OFF

         ENTER FAN CUT-IN VALUE
```

Figure 5.   Condenser Fan Setpoint screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Cut-in setpoint	Cut-in value
Cut-out setpoint	Cut-out value

Valves

Selecting the **Valves** option opens the Condenser Split Valve Parameters screen (Figure 6).

```
     CONDENSER SPLIT VALVE PARAMETERS
Name: CONDENSER
Coil:  100%    50%    25%
Cut-In: 185    185    ---
Cut-Out:120    120    ---
Active Coil: 25%                      HELP
Staging:DOWN Time Remaining:  0 secs.
        ENTER VALVE STAGE CUT-IN VALUE
```

Figure 6. Condenser Split Valve Parameters screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Cut-in values for percentages listed	Valves stage cut-in value.
Cut-out values for percentages listed	Valves stage cut-out value.
Active Coil %	Percent of active coil.
Stage Up/Down	Percent the coil is being increased or decreased.
Staging Time Remaining	Amount of time before the next stage occurs.

The Condenser Split Valve Parameters screen also provides a **Help** option that can be used to open the Condenser Split Valve Help screen (Figure 7).

```
CONDENSER SPLIT VALVE HELP SCREEN
---The cut-in setpoint is used when the
pressure is rising, increasing condenser
capacity to the next largest stage.
---The cut-out setpoint is used when the
pressure is dropping, reducing condenser
capacity to the next smallest stage.
         PRESS ANY KEY
```

Figure 7.   Condenser Split Valve Help screen

Pressing any key returns the user to the Condenser Split Valve Parameters screen.

Timing

Selecting the **Timing** option opens the Condenser Timing Parameters screen (Figure 8).

```
        CONDENSER TIMING PARAMETERS
Name: CONDENSER
          Stage    Stage    Min.     Min.
           Up      Down      On      Off
Fans:       4        0       10        0
Valves:    30       30        0        0
Valve Startup Delay:   4 secs.
       ENTER FROM 0 TO 998 SECONDS
```

Figure 8.   Condenser Timing Parameters screen

This screen can be used to monitor and change the following parameters.

PARAMETER	INFORMATION TO BE ENTERED
Fans Stage Up	0 to 998 seconds
Fans Stage Down	0 to 998 seconds
Fans Min ON	0 to 998 seconds
Fans Min Off	0 to 998 seconds
Valves Stage Up	0 to 998 seconds
Valves Stage Down	0 to 998 seconds
Valves Min On	0 to 998 seconds
Valves Min Off	0 to 998 seconds.
Valve Startup Delay	0 to 998 seconds.

Circuit/Defrost

Selecting the **Circuit Defrost** option from the Load Menu screen opens the Circuit/Defrost Group Selection Menu. Selecting a group listed in this menu opens the Circuit/Defrost Group Control screen, which offers the following options:

■ Defrost Points
■ Circuit Points
■ Group Valve Parameters (not currently used)

Defrost Points

Selecting the **Defrost Points** option opens the Defrost Selection Menu, which lists each circuit defrost load and an option that can be used to access setpoint information about each.

■ Selecting the load displays the Defrost Schedules screen for that load (Figure 9).

```
            DEFROST  SCHEDULES
  Name: SD2 DEFROST        Type: ELECTRIC
  Schedule:
    02:00    :    :   14:00   :     :
  Last defrost:02:00 Time remaining:  0:00
  Force defrost?  YES  NO  Status:
  Terminate at:    54  Actual:  -4 'F
      ENTER 9999 TO CLEAR SCHEDULE TIME
```

Figure 9. Defrost Schedules screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Schedule Times (Super User access privileges required)	Schedule time or **9999** (to clear the schedule time) NOTE! Schedule times must be entered in 24-hour format (0100, 0200, 1100, 1500, etc.).
Force Defrost? (Super User not required)	**Yes**: Press **enter** to force a defrost **No**: Press **enter** to cancel a defrost
Terminate at (Super User not required)	Load's defrost terminate setpoint.
Actual (Super User not required)	Termination input value.

■ Selecting the load's setpoints displays the Defrost Setpoints screen for that load (Figure 10).

```
        DEFROST  SETPOINTS
Name: SD2 DEFROST
Defrosts per day: 2   Drip time: 3 min.
Maximum defrost time: 36 min.
Minimum defrost time:  0 min.
Termination temperature:  -4 'F
Termination setpoint:     54 'F
        ENTER FROM 0 TO 99 MINUTES
```

Figure 10. Defrost Setpoints screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Drip time	0 to 99 minutes
Maximum Defrost time	0 to 99 minutes
Minimum Defrost time	0 to 99 minutes
Termination setpoint	Termination temperature

Circuit Points

Selecting the **Circuit Points** option in the Circuit/Defrost Group Control screen opens the Circuit Selection Menu, which lists the circuit points. Selecting a circuit listed on this menu opens the Circuit Control screen for that load (Figure 11).

```
       CIRCUIT  CONTROL
Name: SD2 MD TP WI CSE
Setpoints: Cut-In Cut-Out
             33      31  'F

Status:OFF     Current Input: 32  'F
Dual Temp?  ENABLE  DISABLE
        ENTER THE CUT-IN VALUE
```

Figure 11. Circuit Control screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Cut-In Setpoint	Cut-in value.
Cut-Out Setpoint	Cut-out value.
Status	Load on/off status
Current Input	Circuit control sensor value.
Dual Temp?	**Enable**: Press **enter** to enable the dual-temp option. **Disable**: Press **enter** to disable the dual-temp option.

Universal Loads

Selecting the **Universal Loads** option from the Load Menu opens the Universal Load Selection Menu, which provides two options for each universal load listed:

- Setpoints
- Timing

Setpoints

Selecting the **Setpoints** option for a specific load opens the Universal Load Setpoints screen for that load (Figure 12).


```
          UNIVERSAL LOAD SETPOINTS
Name: SUBCOOLER 1     SV           SENSORS
Setpoints: Cut-In Cut-Out          Actual:
Primary:       50      49  `F         49
Secondary:     50      49  `F       HIGH
Override:   INACTIVE
Lockout:    INACTIVE
       ENTER THE PRIMARY CUT-IN VALUE
```

Figure 12. Universal Load Setpoints screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Primary cut-in setpoint	Primary cut-in value
Primary cut-out setpoint	Primary cut-out value
Secondary cut-in setpoint	Secondary cut-in value
Secondary cut-out setpoint	Secondary cut-out value
Lockout	Temperature above which, below which, inside of which, or outside of which lockout occurs.
Actual	Value of the control input (indicating highest/avg/lowest of all input sensors selected)

Selecting the **Sensors** option in the upper right corner of the screen opens the Control Input Sensors screen (Figure 22), which lists the load's input sensors and actual input value. This screen is for information purposes only. No parameters can be changed.

Timing

Selecting the **Timing** option for a specific load in the Universal Load Selection Menu opens the Universal Timing Parameters screen (Figure 13).
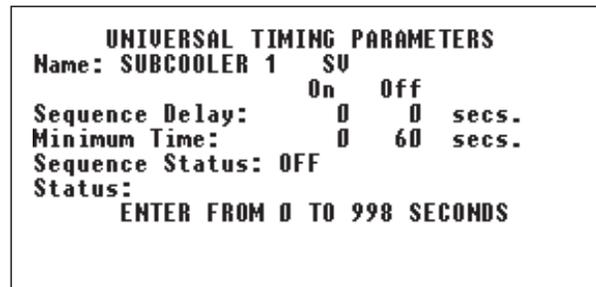
```
        UNIVERSAL TIMING PARAMETERS
    Name: SUBCOOLER 1    SV
                      On    Off
    Sequence Delay:      0     0   secs.
    Minimum Time:        0    60   secs.
    Sequence Status: OFF
    Status:
            ENTER FROM 0 TO 998 SECONDS
```

Figure 13.   Universal Timing Parameters screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Sequence delay on	0 to 998 seconds
Sequence delay off	0 to 998 seconds
Minimum time on	0 to 998 seconds
Minimum time off	0 to 998 seconds
Sequence Status	State of the sequenced point
Status	Override lockout (on/off)

Analog Control

Selecting the **Analog Control** option from the Load Menu opens the Analog Load Selection Menu. For each load listed, the screen provides two options:

■ Setpoints

When this option is selected, an Analog Output Load Setpoints screen displays the cut-in and cut-out setpoints. If the user selects the **Sensor** option a Control Input Sensors screen displays the sensors and their values. This information is for viewing only. No changes can be made.

■ Timing

When this option is selected, an Analog Output Timing Parameters screen displays the sequence delay, ramp up and down, and sensor delay settings, which can range from 0 to 998 seconds. The screen also shows the Sequence Status, but it cannot be changed.

Multi-Alarm Loads

Selecting the **Multi-Alarm Loads** option from the Load Menu opens the Multiple Alarm Load Selection Menu. If the user selects the alarm type, a Multiple Alarm Parameters screen displays Name, Operating Mode, and Alarm Response information about it.

If the user selects an alarm, the Alarm Point Parameters screen displays the following information:

- Module point
- Name
- Call out (Immediate, Previous, Both, No Call)
- Alarm when (Trigger count)

Compressor Monitor

Selecting the **Compressor Monitor** option from the Load Menu opens a Compressor Alarm Load Selection Menu.

Selecting a load opens a Compressor Alarm Parameters screen. It shows the operating mode (which can be set to **Run** or **Standby**) and point information (for viewing only). The arrow key can be used to display additional compressor points.

If the user selects a compressor point and presses **enter**, the system displays the point name and the following parameters for that point.

PARAMETER	OPTIONS
Hot gas	Outside/Inside 30°–375°F
Amps	Above/Below 0–50 amps
Oil Press	Closed/Open
Auxiliary	Above/Below °F amps Closed/Open psi

This screen can be used to monitor and change the parameter settings.

Case Controller

Selecting the **Case Controller** option from the Load Menu opens the Case Selection Menu. If the user selects an option, the screen displays the following Case Controller information:

- Name
- Setpoints (Primary Cut-in/Cut-out and Secondary Cut-in/Cut-out)
- Status (circuit)
- Case Temperature

The primary and secondary cut-in and cut-out setpoints can be changed by entering a value from 80°F to 40°F. The remaining information cannot be changed.

Float Control

Selecting the **Float Control** option from the Load Menu opens a Float Loads Parameters screen, which can be used to monitor and change the following parameters.

PARAMETER	OPTIONS
Adjustment upward	0–10 psi
Adj max	0–49 psi
Recalculation time	0–60 minutes
Strategy	input limit or output
Tolerance factor	0 or 1 max

Annunciator Control

Selecting the **Annunciator Control** option from the Load Menu opens an Annunciator Load Select Menu. Selecting the **Annunciator Control** option displays the following Annunciator Parameters:

- Output flasher on time/off time
- Minimum on time
- Sequence
- Silence

Although this screen indicates that the user can enter values from 0 to 998 seconds, this screen is for viewing purposes only. No changes can be made.

Alarms

Selecting the **Alarms** option from the Main Menu displays the Alarm Selection Menu (Figure 14).

```
        ALARM SELECTION MENU
Alarm Name:      Setpoints:       Status:
D1 DAIRY      CLR OUTSIDE  23   45     40
D2 EGGS       CSE OUTSIDE  23   45     41
D3 MD DAIRY   CSE OUTSIDE  23   45     40
D4 MD DAIRY   CSE OUTSIDE  23   45     42
D5 MD DELI    CSE OUTSIDE  21   43     38
   HIGHLIGHT SELECTION AND PRESS ENTER
```

Figure 14.   Alarm Selection Menu

NOTE!   The list probably extends beyond the viewing area. The **up** or **down arrow** keys can be used to scroll through the list.

Selecting an alarm opens the Alarm Setpoints screen for that alarm (Figure 15).

```
        ALARM  SETPOINTS
Name: D1 DAIRY      CLR CRITICAL
Setpoint: OUTSIDE    23 to   45 'F
Response Delay:  90 min.
Event Delay:     10 min.
History Max:     50  Min:    38 'F

   USE UP/DN ARROW KEYS TO SELECT TYPE
```

Figure 15.   Alarm Setpoint screen

This screen can be used to monitor and change the following parameters.

PARAMETER	INFORMATION DISPLAYED
Alarm name and type	Critical or noncritical
Setpoint	Actual alarm setpoints with Inside, Outside, Above, or Below logic.
Clr setpoint	Lower value of the range.
Critical setpoint	Upper value of the range.
Response delay	Amount of time the alarm condition exists before the alarm goes active.
Event delay	Event delay time
History Max/Min	Minimum and maximum values of the alarm input since the last download.

Alarm Scan

Selecting the **Alarm Scan** option from the Main Menu displays the Alarm Scan and View screen, which offers two options:

■ Scan for Recent Alarms
■ View Alarm Call Queue

Scan for Recent Alarms

Selecting the **Scan for Recent Alarms** option opens the Alarm Recent History screen (Figure 16).


```
                 ALARM RECENT HISTORY
Type:        Name:                  Time/Date:
MNTR    9 SD2 MD TP WI CSE 04:16 02/17/00
MNTR   11 D8 ISL CHESE CSE 12:00 02/15/00
MNTR   12 D9 MD BEER          12:00 02/15/00
MNTR   13 D10 MD BEER         12:00 02/15/00
MNTR   41 SAT SUCTION PSIG 11:00 02/15/00
        USE ARROW KEYS TO SCROLL LIST        1
```

Figure16. Alarm Recent History screen

The screen provides recent alarm information only; no parameters can be changed.

NOTE! The information displayed will probably extend beyond the viewing area. Use the **up** or **down arrow** keys to scroll through the list.

View Alarm Call Queue

Selecting the **View Alarm Call Queue** option opens the Alarm Report History screen (Figure 17).


```
                 ALARM REPORT HISTORY
Type:        Name:                  Time/Date:
MNTR    9 SD2 MD TP WI CSE 12:10 02/15/00
MNTR    9 SD2 MD TP WI CSE 16:16 02/15/00
MNTR    9 SD2 MD TP WI CSE 04:16 02/16/00
MNTR    9 SD2 MD TP WI CSE 16:16 02/16/00
MNTR    9 SD2 MD TP WI CSE 04:16 02/17/00
        USE ARROW KEYS TO SCROLL LIST       34
```

Figure 17. Alarm Report History screen

The screen displays alarm history information only; no parameters can be changed.

NOTE! The information displayed will probably extend beyond the viewing area. Use the **up** or **down arrow** keys to scroll through the list.

History Logs

Selecting the **History Logs** option from the Main Menu opens the History Logs screen, which provides a list of the available logs. Selecting any log listed on this screen opens a screen that displays the following information about the selected log:

- Name
- Number of entries and the frequency with which they are logged
- Running mode
- Offset time (if applicable)

The screen also offers three options for viewing the log information.

- Tabular
- Graphical
- Point Identification

Tabular

Selecting the **Tabular** display option opens the historical data in a tabular format (Figure 18). The right arrow key can be used to display Logs 5 through 8. The up arrow key can be used to view previous history.

Figure 18. Tabular display

Graphical

Selecting the **Graphical** display option for the same alarm displays the Graphic Point Selection screen for the alarm (Figure 19).

Figure 19. Graphic Point Selection screen

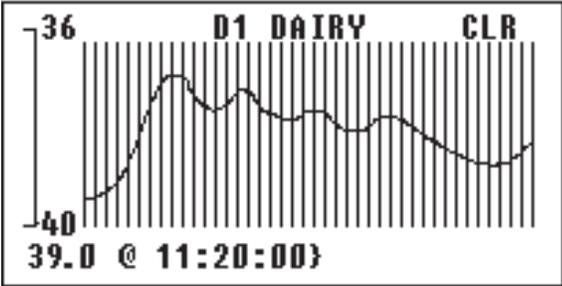Selecting a graphic point displays the information in graphic format (Figure 20).

Figure 20. Graphic Format Display screen

Point Identification

Selecting the **Point Identification** option displays the identification information for each alarm point configured for the load (Figure 21).
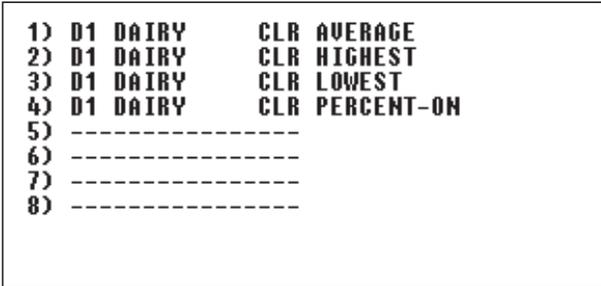

Figure 21. Point Identification screen

Schedules

Selecting the **Schedules** option in the Main Menu opens the Schedule Selection Menu, which provides a list of the existing schedules. If the user selects a schedule and presses **Enter**, a Schedule Information screen (Figure 22) opens.

```
              SCHEDULE INFORMATION
      1 sched 1              DAILY  ACTIVE-OFF
     01/01-12/31


   Today  Tomorrow : Exceptions  Forcing
      Sun  Mon  Tue  Wed  Thu  Fri  Sat
   HIGHLIGHT SELECTION AND PRESS ENTER
```
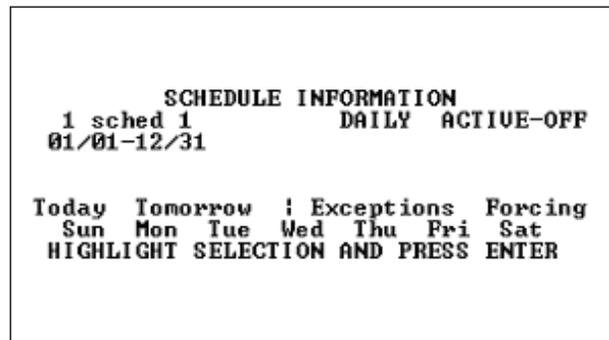
Figure 22. Schedule Information screen

It displays the following options, which can be used to change or force an existing schedule:

- Today
- Tomorrow
- Exceptions
- Forcing

Schedules cannot be created from the Refrigeration Controller.

If the user selects the **Forcing** option, a Schedule Control screen (Figure 23) opens.

```
              SCHEDULE CONTROL
   Name:           sched 1
   Current Status: ACTIVE-OFF
   Forcing State:  INACTIVE
   Chained to:


      USE UP/DN KEYS TO SELECT STATE
```

Figure 23. Schedule Control screen

In this screen, the FORCING STATE field can be set to **Active On**, **Active Off**, or **Inactive**.

Monitoring

Selecting the **Monitoring** option from the Main Menu displays status information for all loads in the system (Figure 24).

```
SAT COMPRESSORS     1     2      3      4
MOD-OUTPUT PT:   16-04 16-05   ---    ---
RUN STATUS:        ON   OFF    ---    ---
ACTUAL AMPS:        0     0    ---    ---
CAPACITY- HP:       5     5    ---    ---
HOT GAS TEMP:       3     3    ---    ---
OIL PRESSURE:      OK    OK    ---    ---
ALARM STATUS:      OK    OK    ---    ---
```
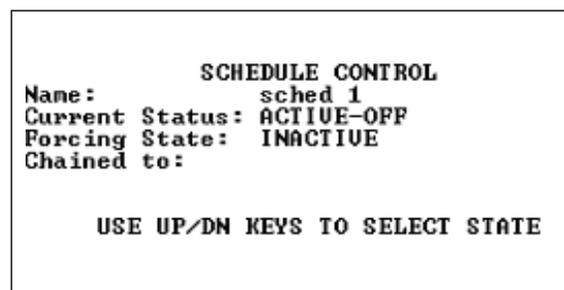
Figure 24.   Status Information screen

NOTE!   Monitoring information can also be accessed from the system log-in screen (without entering an access code).

If an input value is flashing, the associated point has been forced.

NOTE!   The information displayed will extend beyond the viewing area. The arrow keys can be used to scroll up, down, left, or right through the list.

Diagnostics

Selecting the **Diagnostics** option from the Main Menu opens the Diagnostics Menu, which offers the following options:

- Set Clock and Display
- Unit Configuration
- Module Configuration
- RCU Configuration
- FIFO Test
- Disk Services
- LAN Setup
- Memory Dump

Set Clock and Display

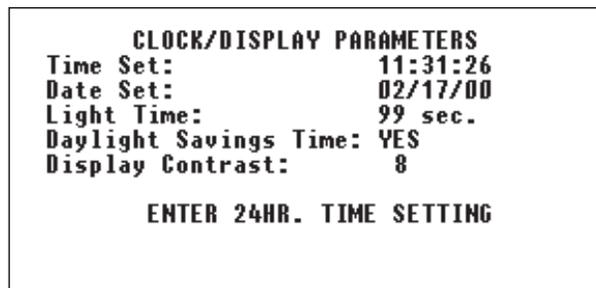Selecting the **Set Clock and Display** option opens the Clock/Display Parameters screen (Figure 25).

```
        CLOCK/DISPLAY PARAMETERS
Time Set:                  11:31:26
Date Set:                  02/17/00
Light Time:                99 sec.
Daylight Savings Time: YES
Display Contrast:          8

        ENTER 24HR. TIME SETTING
```

Figure 25.   Clock/Display Parameters screen

Setting the Date and Time

The following procedure can be used to set the controller's date and time.

Step	Procedure
1	Move the cursor to the TIME SET field.
2	Enter the correct time in 24-hour format (0100, 1100, 1500, etc.) and press **enter**.
3	Move the cursor to the DATE SET field.
4	Enter the date in MM/DD/YY format and press **enter**.
5	Move the cursor to the DAYLIGHT SAVINGS TIME field.
6	Use the **arrow** keys to select the appropriate option: ■ **Yes** = Enables Daylight Savings Time. ■ **No** = Disables Daylight Savings Time.

Adjusting the Display Contrast and Light Time

When the user selects the **Display Contrast** option in the Clock/Display Parameters screen, the system provides fields for adjusting the display contrast and the backlight cut-off time. The cut-off time determines how long the backlight remains lit when the keyboard is not being used.

The following procedure should be used to adjust the contrast and cut-off times.

Step	Procedure
1	Move the cursor to the LIGHT TIME field.
2	Enter the amount of time the light is to remain on (0 to 99 seconds).
3	Move the cursor to the DISPLAY CONTRAST field.
4	Press the up or down arrow key to select a display contrast setting from 1 to 15 (1= lightest; 15 = darkest).

Unit Configuration

Selecting the **Unit Configuration** option from the Diagnostics Menu opens the Software Versions and Status screen (Figure 26). This screen is provided for informational purposes only; no parameters can be changed.

```
         Software Versions and Status
Main Rom  # 323   crc:CCB7     0    1
Comm Rom  # 323   crc:FEF5     2    3
Main Ram  # 326   loaded 11:56 Jan 05 00
Comm Ram  # 326   loaded 12:46 Jan 05 00
Load Files:   loaded ok    10:30 02/15/00
ps:4400 pe:9C55
Unit: 01 Switch: [1on   2on   3on   4on ]
```

Figure 26.   Software Versions and Status screen

Module Configuration

Selecting the **Module Configuration** option from the Diagnostics Menu opens a list of system controllers (Figure 27).

```
MODULE NAME         ADDR TYPE        COMM
RACK MTD              0 RCU      *      0
RACK MTA              1 RCU             0
RACK LTB              2 RCU             0
RACK MTC              3 RCU             0
RACK MTE              5 RCU             0
RACK LTB              7 RCU             0
   USE ARROW KEYS TO SELECT MODULE      1
```

Figure 27.   System Controllers screen

Selecting any controller with an asterisk on this screen displays module information for the controller. For example, if the user selects the RACK MTD, the screen shown in Figure 28 opens.

```
MODULE NAME      ADDR TYPE      COMM
C.O.M.            16 CMPRSSR      86
C.C.M.            20 CNDNSR       49
R.I.M.            24 RK IN        14
R.O.M.            32 RK OUT       87
R.O.M.            33 RK OUT       73
C.I.M. D1         40 CASE IN      31
   USE ARROW KEYS TO SELECT MODULE    1
```

Figure 28. Module screen

This screen offers the following information.

FIELD	EXPLANATION
MODULE NAME	Name of the module as identified in the software.
ADDR	Module address.
TYPE	Type of module configured in the software.
COMM	Communication coefficient counts. ■ If this value is counting upward (higher) and displays a "C" beside the module, the module is not communicating properly.

Selecting any modules on this screen opens the Module Menu, which offers the following options.

- View Inputs
- View Outputs
- Force Outputs
- Force Inputs
- Activation

View Inputs

Selecting the **View Inputs** option from the Module Menu opens the View Inputs screen (Figure 29).

```
#    INPUT NAME        TYPE    VALUE
1    D5 MD DELI    CSE ANALG    40.0 `F
2    D6 MD DELI    CSE ANALG    41.0 `F
3    D7 DELI       CLR ANALG    43.0 `F
4    SD3 SD SLF SVCSE ANALG     40.0 `F
5    D8 ISL CHESE CSE ANALG     42.0 `F
6                      ANALG    40.0 `F
        USE ARROW KEYS TO SCROLL LIST    1
```

Figure 29.   View Inputs screen

This screen shows each input's name, type, and value. This information is for viewing purposes only; no changes can be made.

View Outputs

Selecting the **View Outputs** option from the Module Menu opens a list of configured outputs (Figure 30), showing the name, type, value, and run information for each.

```
#    OUTPUT NAME       TYP   VAL   RUN TMR
1    COMP D1           DIG    ON  100%   0
2    COMP D2           DIG   OFF   10%   0
3    COMP D3           DIG   OFF   15%   0
4    COMP SD 1-1       DIG    ON    5%   0
5    COMP SD 1-2       DIG   OFF  100%   0
6
        USE ARROW KEYS TO SCROLL LIST    1
```

Figure 30.   View Outputs screen

This screen is for viewing purposes only; no changes can be made.

NOTE!   The list will probably extend beyond the viewing area. The **up** or **down arrow** keys can be used to scroll through the list.

Force Outputs

Selecting the **Force Outputs** option from the Module Menu opens the Module Output List screen (Figure 31).

```
        MODULE OUTPUT LIST
        COMP D1              ON
        COMP D2              OFF
        COMP D3              OFF
        COMP SD 1-1          ON
        COMP SD 1-2          OFF

    USE ARROW KEYS TO SELECT OUTPUT      1
```

Figure 31. Module Output List screen

NOTE! Forcing outputs and inputs places an input or output in a specific state that does not automatically revert. Any forced value must be manually reset to inactive for the Refrigeration Controller to control it.

Selecting a module opens the Output Parameters screen for that module (Figure 32).

```
        OUTPUT   PARAMETERS
    Name: COMP D1           Type: DIGITAL
    Control Status: ON
    Forcing State:    INACTIVE
    HOA Status:       AUTOMATIC
    Contacts:         NORMALLY-CLOSED

        USE UP/DN KEYS TO SELECT STATE
```

Figure 32. Output Parameters screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Forcing State	State (inactive, active-off, active-on)
Contacts	Status (normally closed, normally open)

Force Inputs

Selecting the **Force Inputs** option from the Module Menu opens the Module Input List screen (Figure 33).

```
           MODULE INPUT LIST
           D5 MD DELI    CSE
           D6 MD DELI    CSE
           D7 DELI       CLR
           SD3 SD SLF SVCSE
           D8 ISL CHESE CSE

       USE ARROW KEYS TO SELECT INPUT    1
```

Figure 33.   Module Input List screen

Selecting an input opens an Input Parameters screen for that input (Figure 34).

```
            INPUT  PARAMETERS
    Name: D5 MD DELI   CSE  Type: ANALOG
    Current Value:    40.0 `F
    Forcing State:   INACTIVE
    Forcing Value:    60   `F


            ENTER THE FORCING VALUE
```

Figure 34.   Input Parameters screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION TO BE ENTERED
Forcing State	Forcing state (inactive, active)
Forcing Value	Forcing value (0 to high range value of the input sensor)

Activation

Selecting the **Activation** option from the Module Menu opens the Module Activation screen (Figure 35).

```
            MODULE ACTIVATION
   Name:   C.O.M.
   State:      ACTIVE



        USE UP/DN ARROW KEYS TO SELECT
```
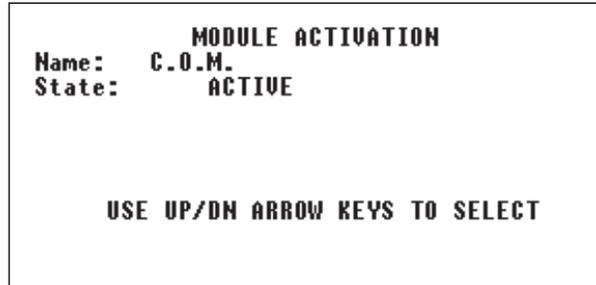
Figure 35.   Module Activation screen

This screen can be used to change the module's State to **Active** or **Inactive**.

NOTE!   Changing the activation state of a module alters the communication. If inactive, the module does *not* attempt communication with the Refrigeration Controller.

RCU Configuration

Selecting the **RCU Configuration** option from the Diagnostics Menu opens the RCU Configuration screen (Figure 36).
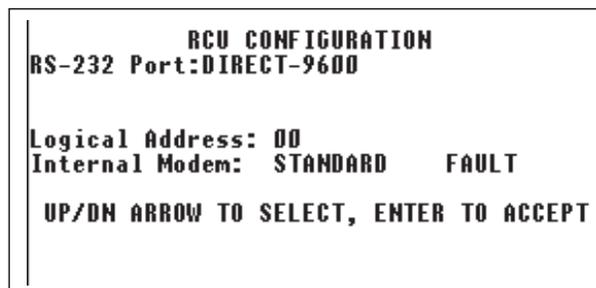
```
            RCU CONFIGURATION
   RS-232 Port:DIRECT-9600


   Logical Address: 00
   Internal Modem:  STANDARD     FAULT

    UP/DN ARROW TO SELECT, ENTER TO ACCEPT
```

Figure 36.   RCU Configuration screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
RS-232 Port	Inactive, Direct-9600.
Logical Address	Displays the actual RCU address setting.
Internal Modem	Information about the internal modem installed in the RCU.

FIFO Test

Selecting the **FIFO Test** option from the Diagnostics Menu opens the FIFO Loop Test screen (Figure 37).

```
FIFO Loop Test:
  180 tries, 180 good, 0 bad


  Alarm   Modul   Stats   Slave   Phone
[    0] [    0] [    0] [    0] [    0]
running          2281
    12    54      81
```

Figure 37.   FIFO Loop Test screen

This screen is intended for Novar Controls personnel use only; no changes can be made.

Disk Services

NOTE!   This service is used only when a disk drive is present.

Selecting the **Disk Services** option from the Diagnostics Menu opens the Disk Services screen (Figure 38).

```
            DISK SERVICES
RCU number to load from disk: 00
Data Rate:   500Kbps
Retry Count: 00

Disk Status:     SYSTEM ON-LINE

   ENTER from 0 to 16 (0= no action)
```

Figure 38.   Disk Services screen

The following parameters can be monitored and changed from this screen.

PARAMETER	INFORMATION DISPLAYED
RCU number to load from disk	Logical address of the RCU to download. ■ Pressing 1 to 16 and **Enter** starts the download; **Clear** exits. ■ 0 = no action
Retry Count	Press **enter** to clear the count.
Disk Status	Status of the disk drive.

LAN Setup

Selecting the **LAN Setup** option from the Diagnostics Menu opens the Local Network Setup screen (Figure 39).
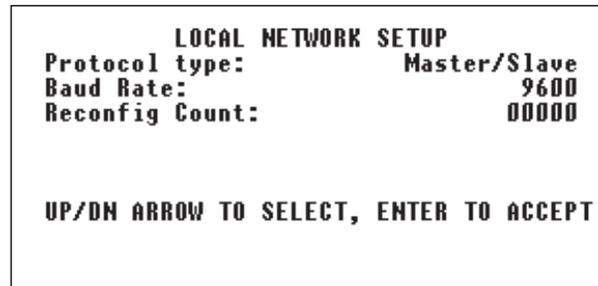
```
          LOCAL NETWORK SETUP
Protocol type:            Master/Slave
Baud Rate:                       9600
Reconfig Count:                 00000



UP/DN ARROW TO SELECT, ENTER TO ACCEPT
```

Figure 39.   Local Network Setup screen

Super User access is required to change the parameters in this screen.

PARAMETER	INFORMATION DISPLAYED
Protocol type	Master/Slave, Novar MOD2, NovNet, NovarNet®.
Baud Rate	Baud rate (300, 1165, 1200, 1800, 2400, 4800, 9600, 19.2K, 38.4K)

Memory Dump

NOTE!   This option is for Novar Controls personnel use only.

Selecting the **Memory Dump** option from the Diagnostics Menu opens the Memory Dump screen (Figure 40).
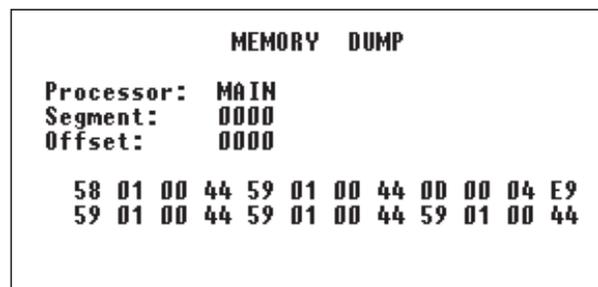
```
             MEMORY   DUMP

Processor:   MAIN
Segment:     0000
Offset:      0000

   58 01 00 44 59 01 00 44 0D 00 04 E9
   59 01 00 44 59 01 00 44 59 01 00 44
```

Figure 40.   Memory Dump screen

The following parameters can be monitored and changed in this screen.

PARAMETER	INFORMATION DISPLAYED
Processor	Processor whose memory is to be dumped.
Segment	Address
Offset	Address